

**Spokane River Dissolved Oxygen TMDL
Advisory Group Meeting
July 27, 2004, 4-6 pm
Department of Ecology Building**

Meeting Notes

Patrick Malone, facilitator, began the meeting with the introduction of Ken Merrill from DOE and the presentation of the Agenda. Patrick asked all in attendance to introduce themselves and complete the sign-in sheet. (The Department has the sign-in sheet on file).

The following Agenda was used for the meeting as previously distributed to all participants via email.

Agenda

4:00 – 4:10	Introductions – Review of Meeting Notes
4:10 – 4:30	New Model Runs (No UAA sponsor scenarios)
4:30 – 5:00	Suggestions/Justifications for Alternative Scenarios
5:00 – 5:05	Break
5:05 – 5:30	Discuss Alternative Implementation Strategies
5:30 – 5:45	TMDL Timeline Update with Milestones
5:50 – 6:00	Next Meeting Agenda

Upon review of the previous meeting notes, it was pointed out by representatives of Inland Paper that the proposed TMDL reduction strategy for phosphorus levels be corrected (and Ken so noted that such corrections had already occurred in his latest edition). Hayden Sewer District representative (Jim Kimball) requested that non-discharge options be added under the general discussion section be included. (Ken clarified that all prior meeting agendas, notes and presentation materials would be posted on the department's TMDL website).

The proposed Agenda was modified to eliminate the break, but otherwise accepted as presented.

Ken handed out copies of his PowerPoint slides and presentation and then reviewed his updated TMDL Reduction Strategy and new model runs (including assumptions and findings).

Discussion of New Model Runs. At the request of members from the last meeting Ken worked with Bob Cusimano to model several different scenarios (but no UAA sponsor scenarios). There was discussion about how Liberty Lake, the City of Spokane and Spokane County were treated under point source compliance schedules. There was a question about the legal authority of DOE to impose compliance standards on new sources. Ken requested that a formal letter be submitted citing differences of legal interpretation on new sources.

2001 was used as a base year and the basic model design conditions/assumptions can be found on page 4 of the presentation. Segment 188 findings were: average difference between no point and treatment is 0.22 mg/L for entire water column when dissolved oxygen (DO) is <8.0 (0.26 mg/L average difference 10-20m interflow zone) and maximum difference is 0.44 mg/L (worst case for all segments). This does not account for possible changes in Sediment Oxygen Demand (SOD). Questions and discussion included: where to apply the .22 mg/L change?; whether an average of .2 is good enough?; how these findings compared to the WRIA Watershed Plan report recommendations and about the differences in modeling levels between studies/modeling by DOE, WRIA Watershed Plan and AVISTA.

Questions regarding the Augmented Flow data at Post Falls gage (745cfs) included: impacts from algae and wind effects at Post Falls under augmented flows; impact of flows from AVISTA summer draw downs (AVISTA representative agree to model at 600/700/800 cfs); comparisons to WRIA Watershed Plan estimated flows by location, and the FERC re-licensing process for AVISTA.

The final run included a scenario at Spokane County's request. Two alternatives were considered. 2003 flow levels were assumed. Questions concerned: where the 100-150 cfs assumption under scenario #2 came from; about removing the discharge from the basin to Peone Prairie through land application; whether other dischargers are considering similar removal strategies; and the extent to which sufficient sites have been identified and studied by Fish and Wildlife or other agencies.

General questions and discussion on this modeling presentation included: impacts of bypass materials (organic sediments) at 9 Mile Falls and how AVISTA monitors these bypass materials; Ken questioned whether there was a real need and justification for further runs – a question Bob Cusimano shares); questions about the natural conditions for Long Lake; how water quality standards were determined for Little Spokane and Hangman Valley; how to handle point and non-point discharge and compliance within these watersheds (who regulates? Who pays? How do we reach 'fairness' in participation) and incorporate Hayden diversion scenario into future runs (it was stated that Bob had previously considered this issue). Ken stated he will talk with Bob about variations by point sources in early summer and comparing discharge/land application variables by flow and time of year.

Under the discussion of "Alternative Implementation Strategies", Rachel Osborn presented a 16 page Summary Implementation Strategy on behalf of the Sierra Club,

Center for Justice and other parties. Rachel briefly reviewed its contents, discussed several of the innovative implementation strategies and responded to questions. (A complete copy will be attached to the meeting materials on the DOE website). She stated that these groups prepared this Strategy because they believe it is a requirement of the court consent decree, the Memorandum of Agreement between DOE and EPA, and DOE TMDL's guidance. Further rationale included that they don't feel the current DOE strategy adequately addresses the implications of low flow years; the probability that the UAA will take two years to complete, and the need to focus actual implementation on discharger strategies. There was discussion about the need to pilot new alternative technology (such as Micro-Media and Blue Water; the need to do more outreach to nonpoint sources; the need for more public awareness and education; about the need to contact more upstream land owners, and around the legal and regulatory process for DOE to produce a Summary Implementation Strategy.

The final segment of the Agenda was a presentation by Ken on his draft timeline in order to submit the TMDL to EPA by December 31, 2004. Ken indicated that he would need to produce a rough/preliminary draft within 30 days. That the cities of Spokane, Spokane Valley and Liberty Lake along with Spokane County need to respond, in writing, now and not wait until the UAA is complete. The EPA representative indicated that DOE needs to move forward with available data through Bob Cusimano's modeling and scenarios and promulgate the TMDL.

August 31st from 4:00 to 6:00pm at the DOE Building was set as the next Advisory Group meeting.

Notes recorded by Patrick Malone.

Attachment 1 – Ken Merrill’s presentation slides

Spokane TMDL Advisory Group

Meeting Agenda

July 27, 2004

- | | |
|--------------------|--|
| 4:00 - 4:10 | Introductions - Review of Meeting Notes |
| 4:10 - 4:30 | New Model Runs (No UAA Sponsor Scenarios) |
| 4:30 - 5:00 | Suggestions/Justifications for alt. model scenarios
Spokane County
Others |
| 5:00 - 5:05 | Break |
| 5:05 - 5:30 | Discuss Alternative Implementation Strategies
Sierra Club
Others |
| 5:30 - 5:45 | TMDL Timeline update with milestones |
| 5:50 - 6:00 | Next Meeting Agenda |

Spokane River Proposed TMDL and Point Source Loading Reduction Strategy - DRAFT (7-23-04)

YR	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
TMDL Schedule w/ existing WQ criteria	TMDL Approval	Phase I - Interim Nutrient Removal				Phase 2 - Final TMDL Goal - Meet D.O. Criteria 0.2 mg/L DO decrease from natural condition by primarily phosphorus control						
Point Sources	Planning for Max TP removal and reuse	Construction		MAX TP removal in-place		Meet natural background conc or Imp Reuse - Lake Monitor - Complete UAA						
Nonpoint Sources	Tributary TMDLs completed with Imp Plan			Begin Implement BMPs		Complete implement BMPs w/ monitoring and adaptive approach						

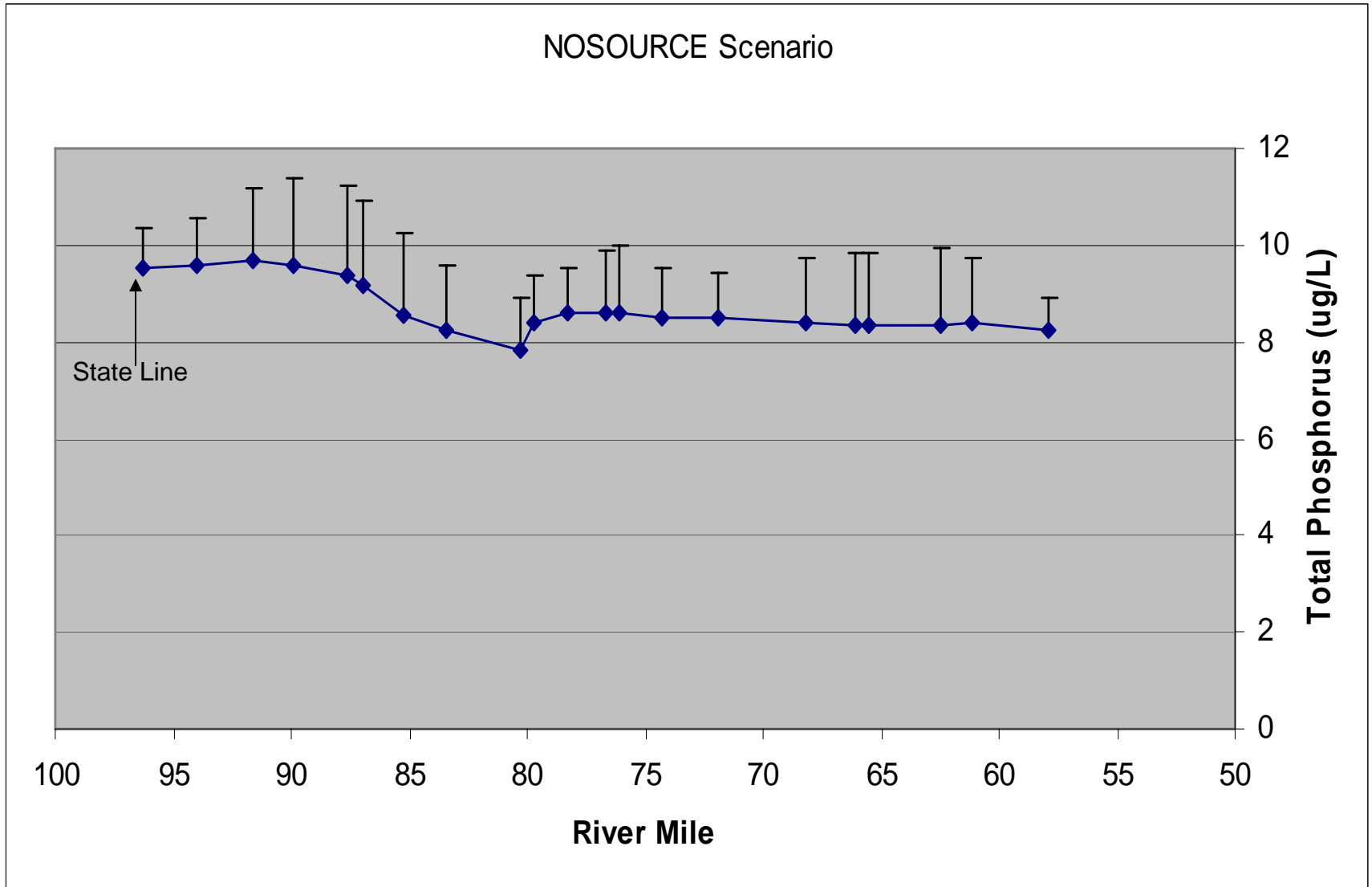
Point Source Phosphorus Loading Reduction

	Existing Avg TP load Summer 2003			Max TP removal Load @ 50 ug/L-all to river		If effluent TP meets natural background concentration - then no need to limit TP loading	Load at TP Final goal @ 10 ug/L to River	
Discharger	#/day	Flow MGD		#/day	Flow MGD		#/day	Flow MGD
CDA	23.6	3.2		1.3	3.2		0.3	3.2
Hayden	??	??		??	??		??	??
Post Falls	9.9	2.1		0.9	2.1		0.2	2.1
Liberty Lake	18.9	0.7		0.3	0.7		0.1	0.7
Kaiser (002+003)	0.2	0.1		0.0	0.1		0.0	0.1
IEP	17.0	4.8*		1.7	4.1		0.3	4.1
Spokane - City	159.4	36.5		11.1	26.5		2.2	26.5
Spokane Co.	NA	NA		4.2	10.0		0.8	10.0
Spokane Storm	??	??		??	??		??	??
NPS Pollutant	NA	NA		NA	NA		??	??
Tot. PS Load	229.0			19.4			3.9	

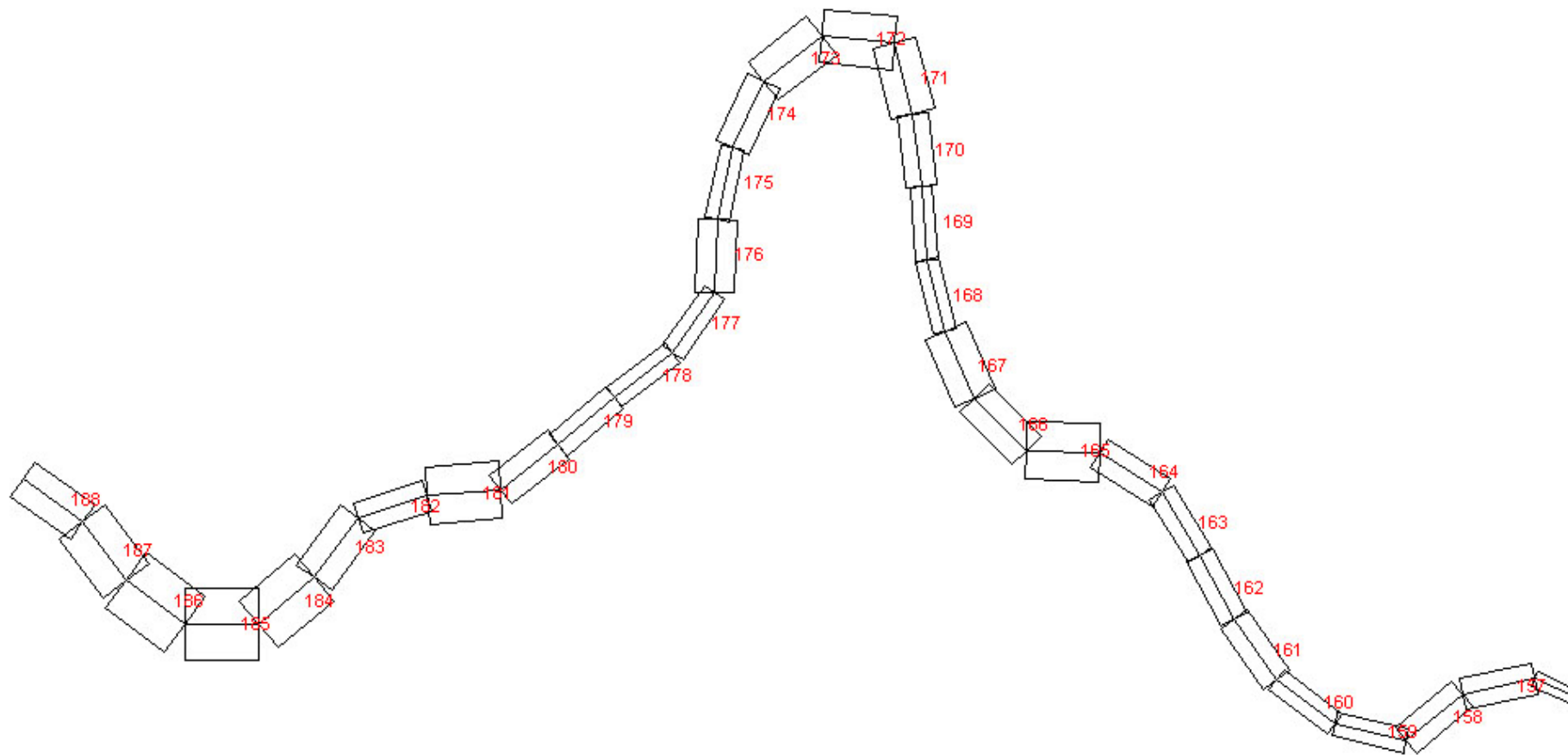
* Includes 0.7 mgd noncontact cooling water from groundwater excluded from future calculations

Pt Src compliance schedule implemented via common Administrative Order then rolled into all individual permits within 2 years

Estimate of 2001 Spokane R. Background Total Phosphorus Concentrations (June – October 15)



CEQUALW2 Lake Spokane Model Segments

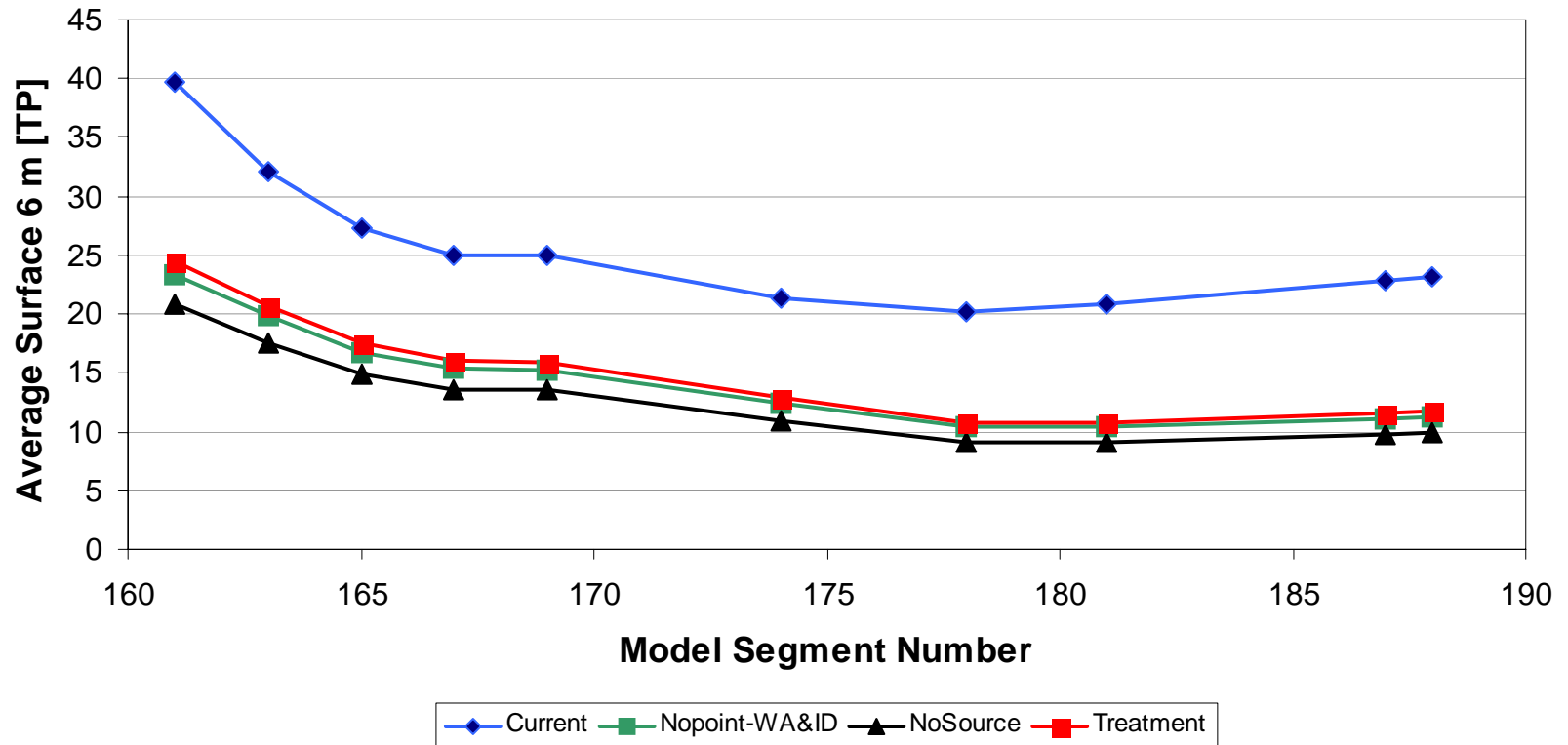


2001 Design Conditions

- Current – Conditions during 2001
- No Source – Estimate of natural conditions
- No point WA & ID – No point sources on the main stem of Spokane R.
- Treatment – Effluents @ 20 ug/L TP
- No adjustments to Sediment Oxygen Demand (SOD) with decreased algal productivity

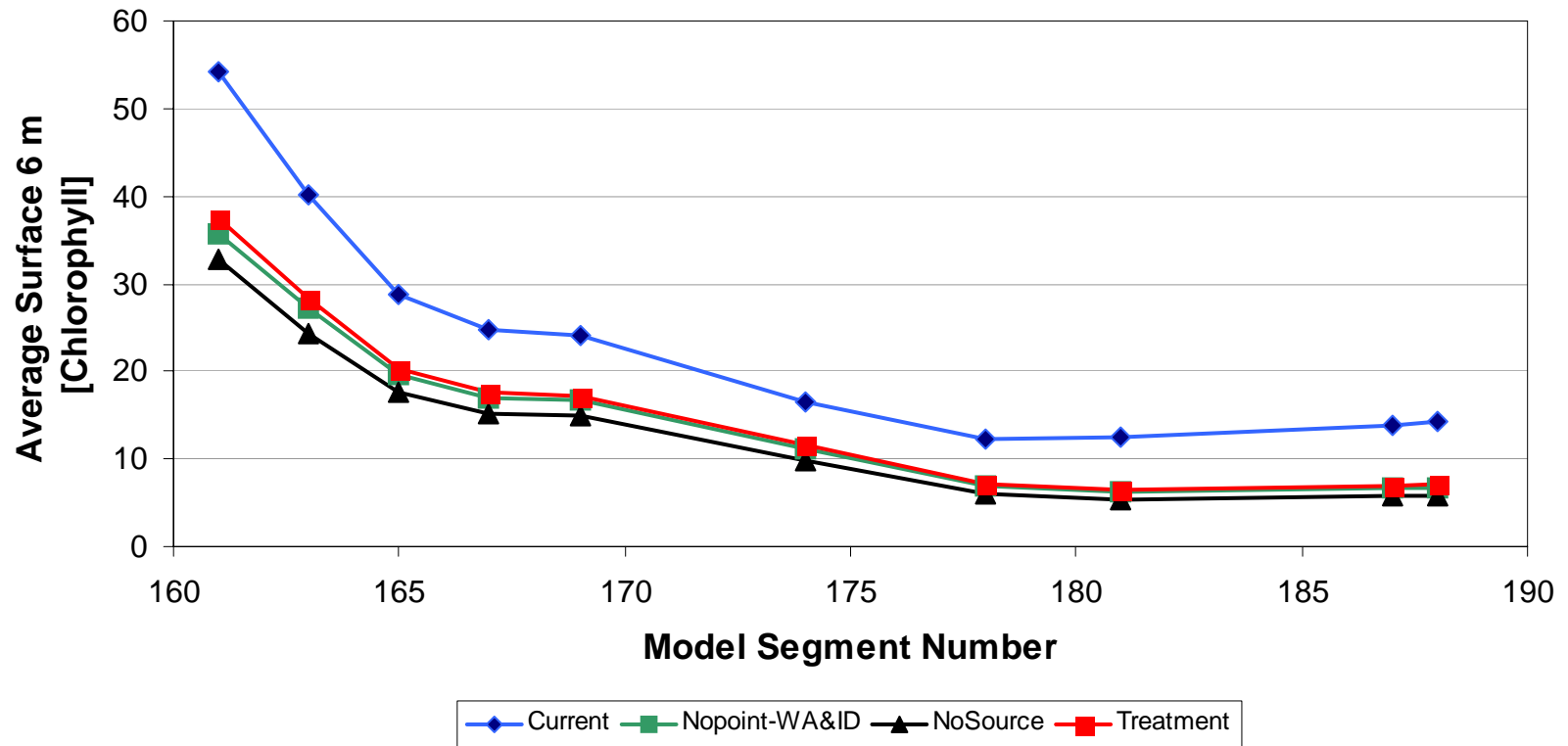
2001 Design Conditions

Lake Spokane Model Predicted
Average Surface 6 m [TP] for Aug 31, Sep 16, & Oct 1 2001

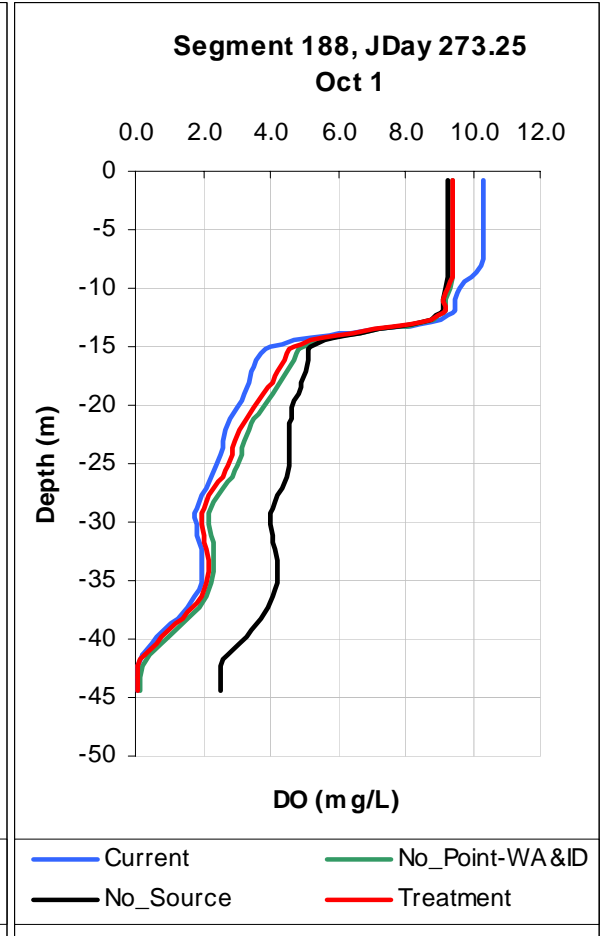
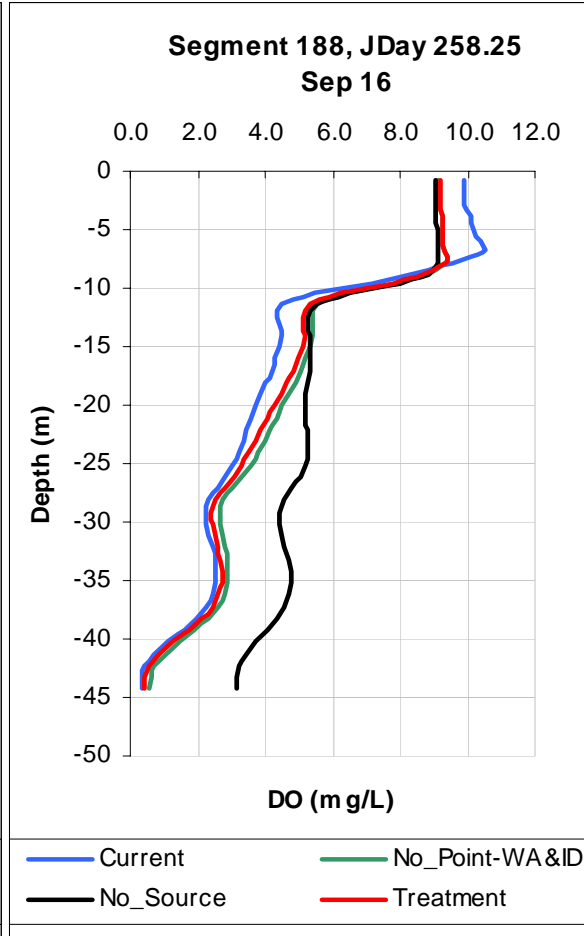
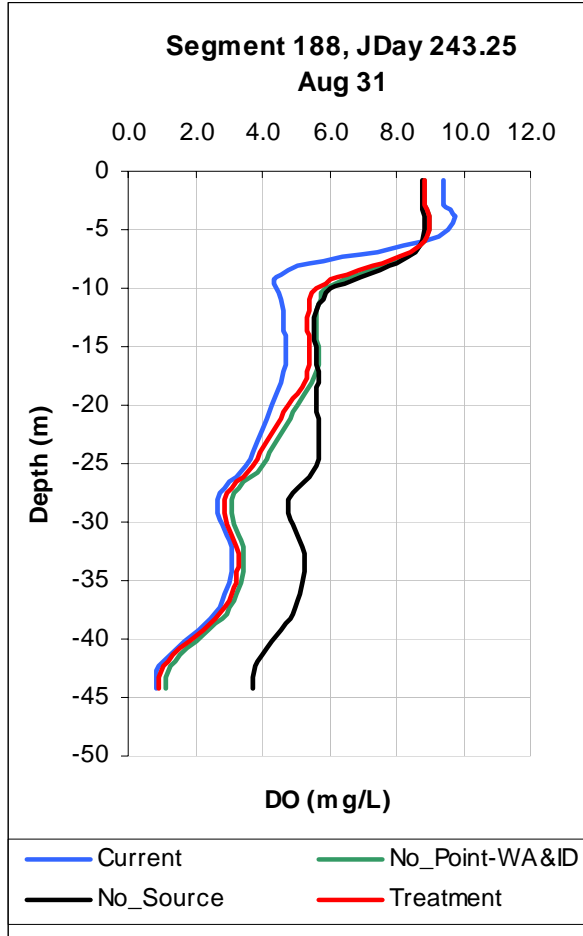


2001 Design Conditions

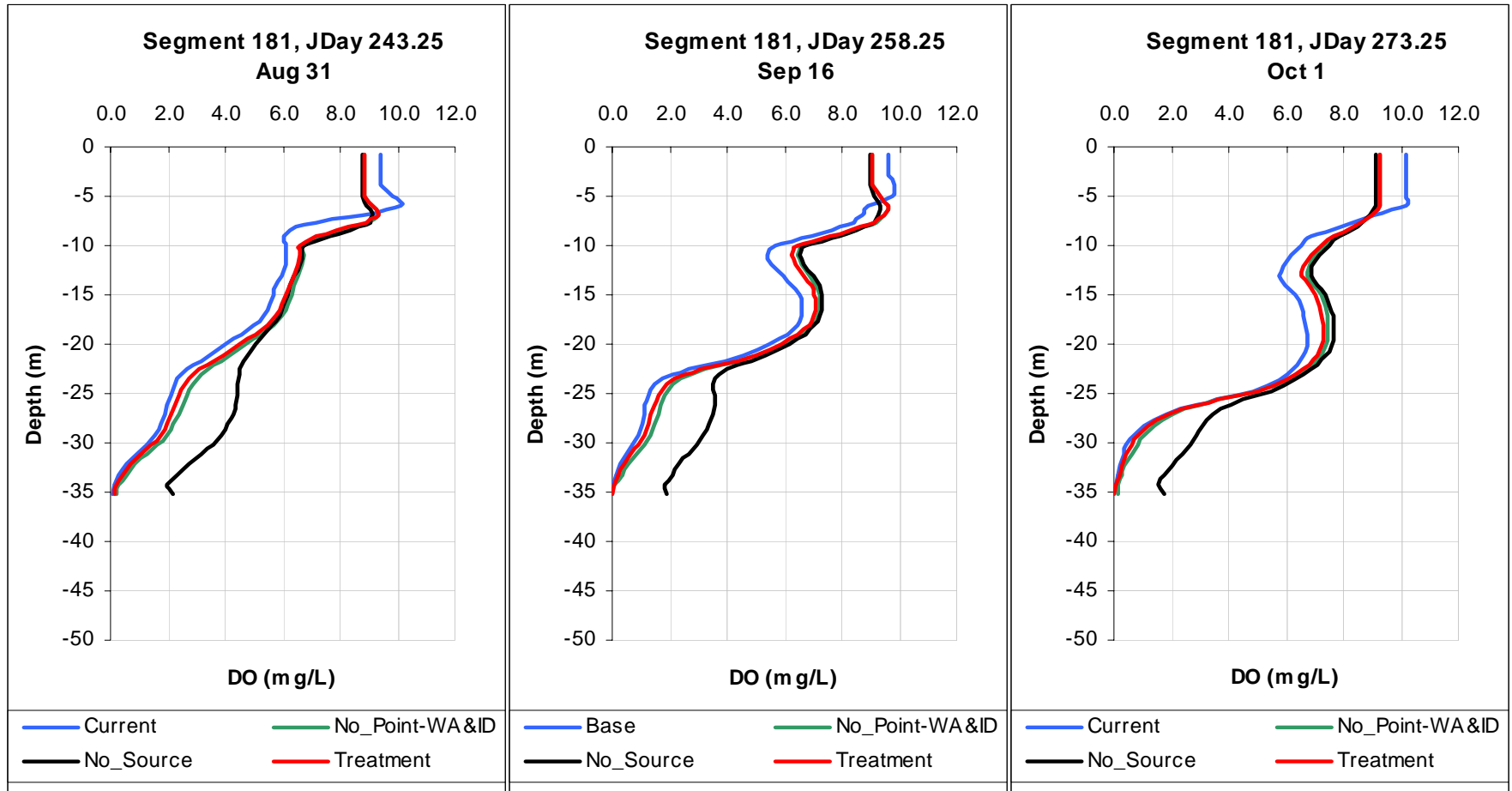
Lake Spokane Model Predicted
Average Surface 6 m [Chlorophyll] for Aug 31, Sep 16, & Oct 1 2001



2001 Design Conditions



2001 Design Conditions



DO Summary - 2001 Conditions

Segment 188 – Near LL0

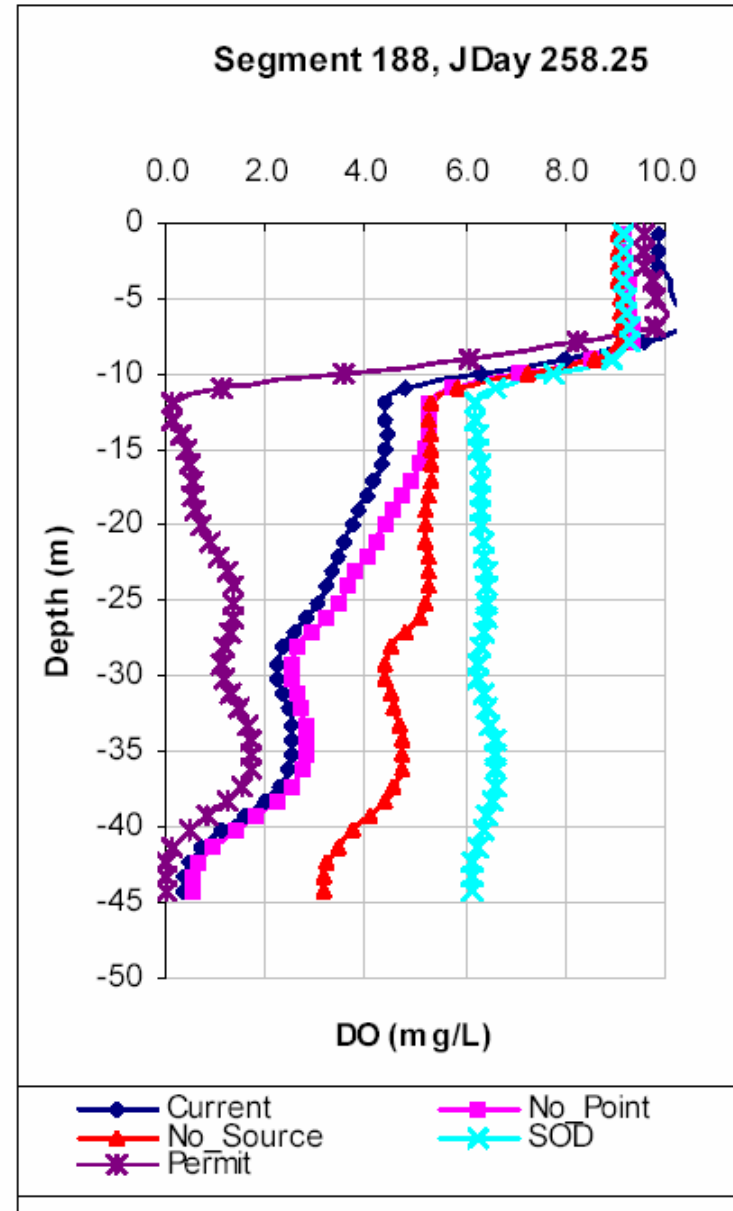
- Avg difference between No Point and Treatment is 0.22 mg/L for entire water column when DO is <8.0 (0.26 mg/L avg. diff. 10-20 m interflow zone)
- Maximum difference is 0.44 mg/L (worst case for all segments)
- Does not account for possible changes in Sediment Oxygen Demand (SOD)

MODEL OUTPUT

(Idaho pt source loads are in “No Point”)

Trend toward reduced Sediment Oxygen Demand (SOD) scenario potentially happens over multiple years if nutrient conc. and algal productivity is significantly and consistently reduced in the river/reservoir

NOTE: For this chart, Idaho pt source loads are still in the “No Point” scenario



Post Falls Minimum Flow

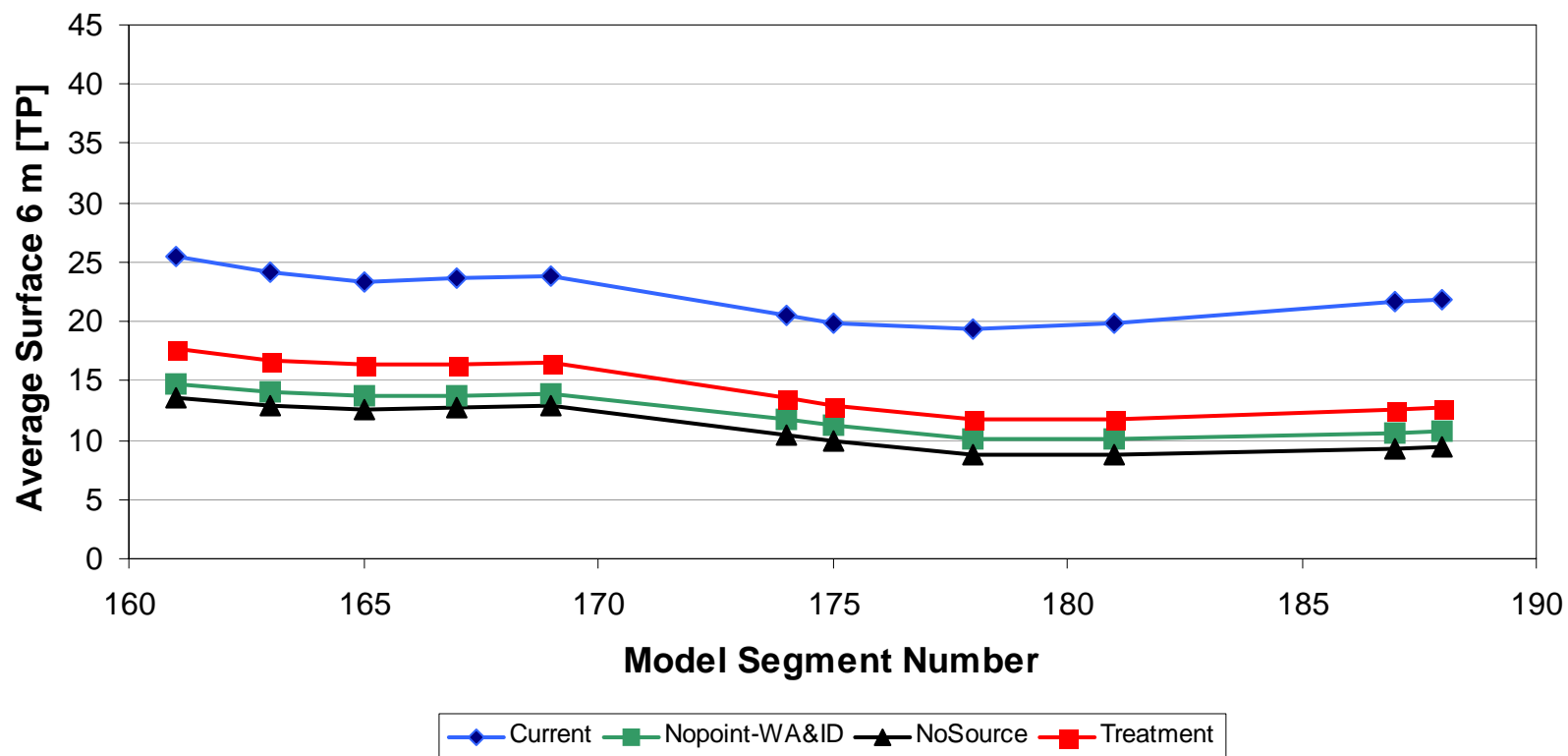
745 cfs @ Post Falls gage

- Preliminary results with boundary conditions estimated at Stateline from uncalibrated model for ID reach
- Flow maintained through September results in 150-250 cfs less flow in late September when compared to 2001

Use for relative comparisons only

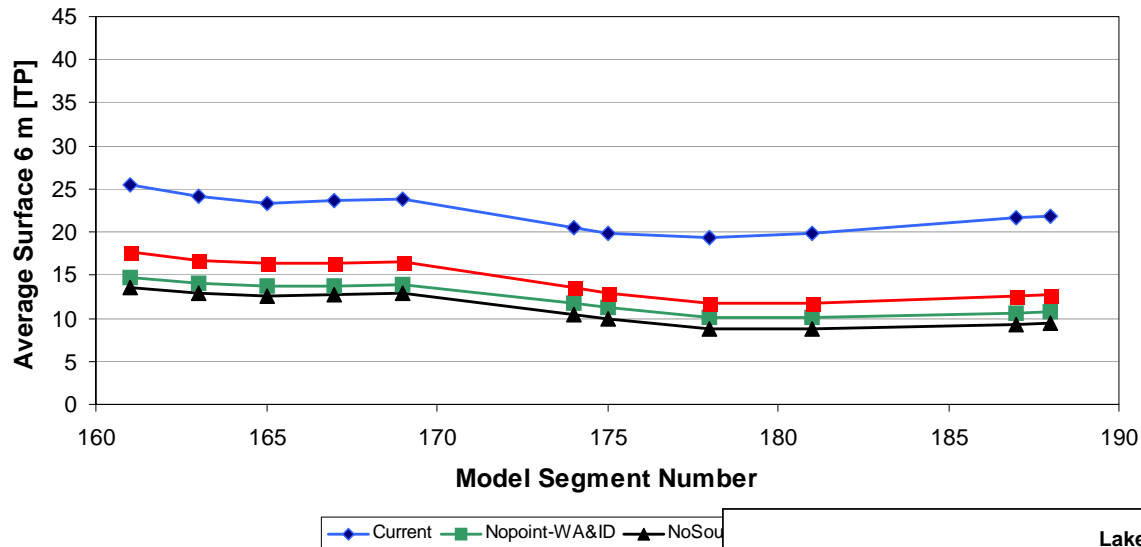
Augmented Flow @ Post Falls gage 745 cfs

Lake Spokane Model Predicted 745 cfs @ Post Falls
Average Surface 6 m [TP] for Aug 31, Sep 9, Sep 16, & Oct 1 2001

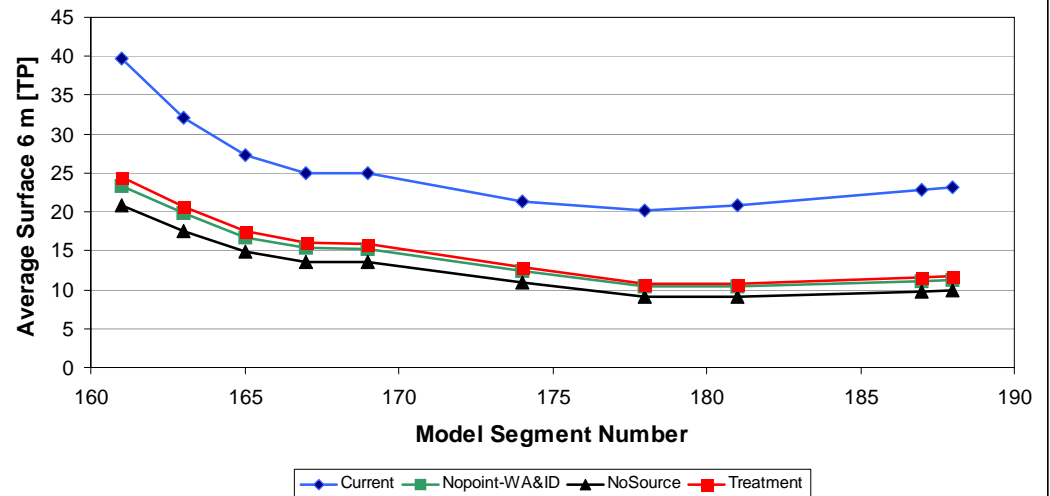


Augmented Flow @ Post Falls 745 cfs

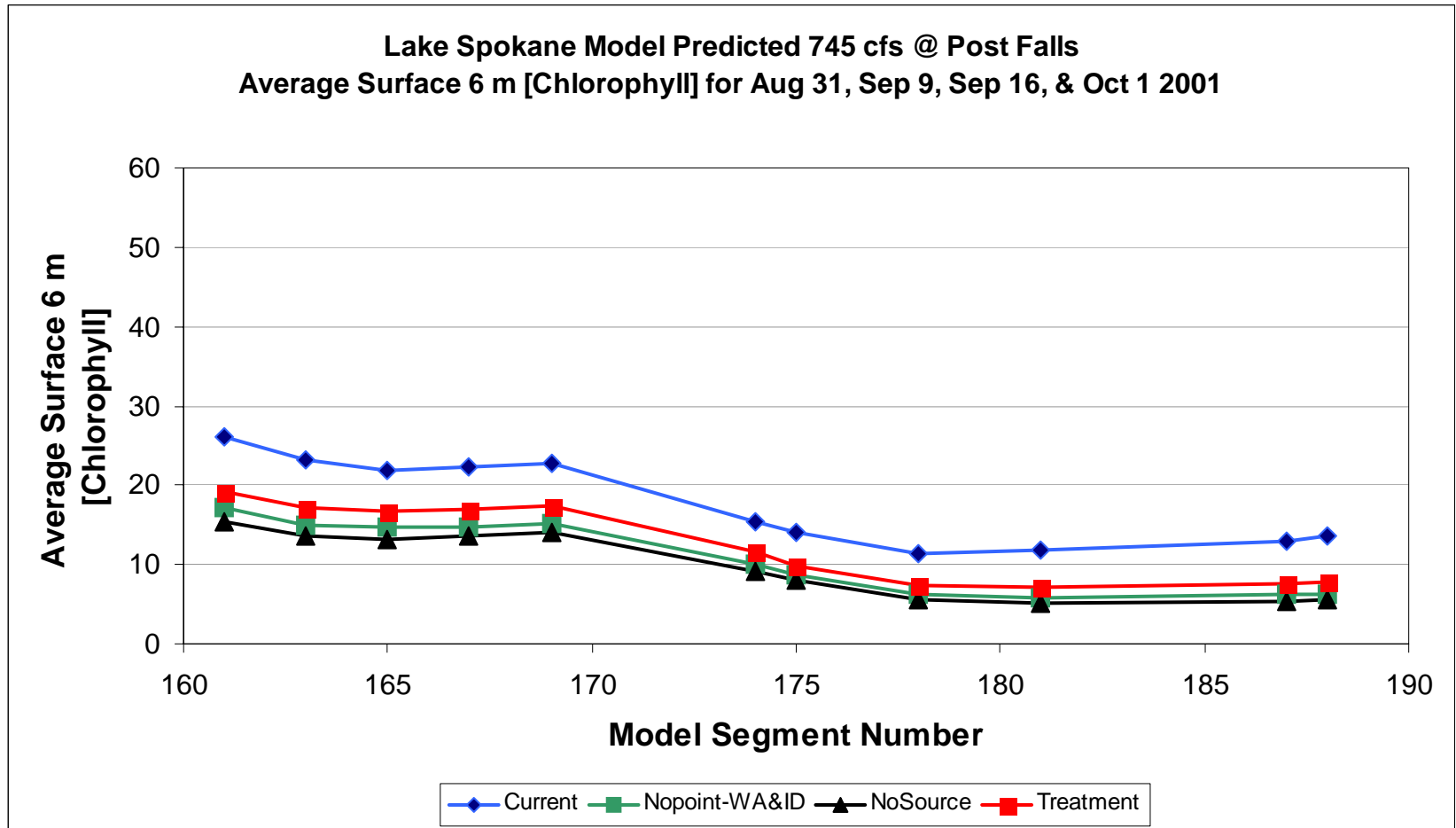
Lake Spokane Model Predicted 745 cfs @ Post Falls
Average Surface 6 m [TP] for Aug 31, Sep 9, Sep 16, & Oct 1 2001



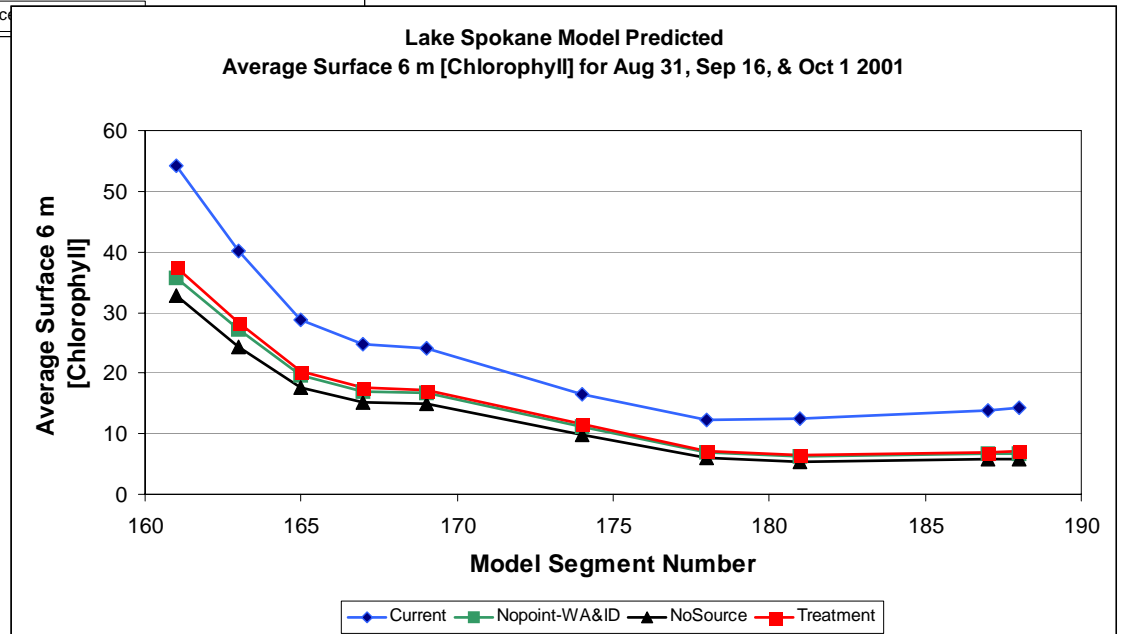
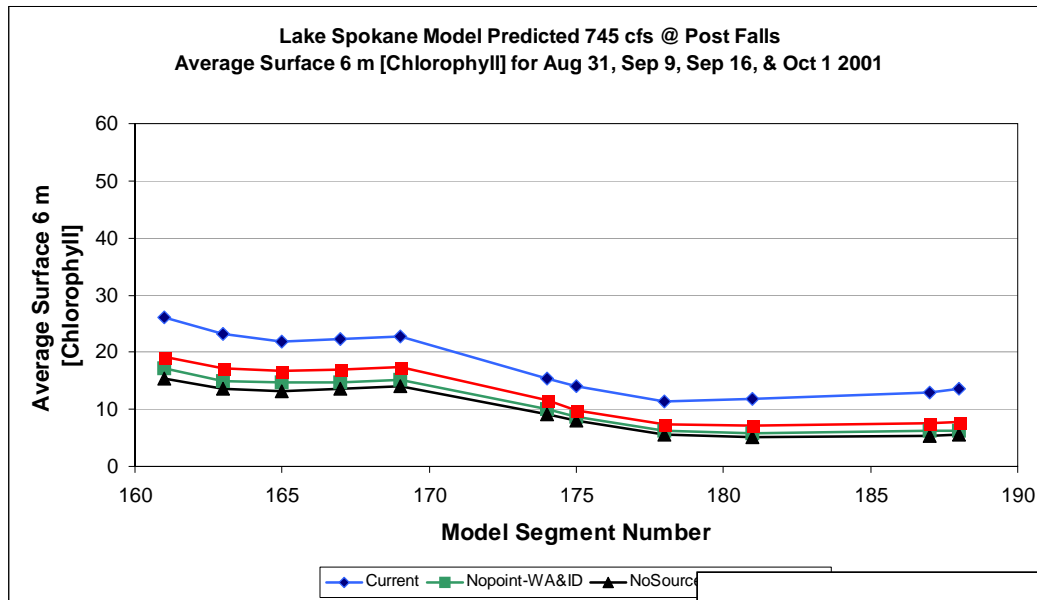
Lake Spokane Model Predicted
Average Surface 6 m [TP] for Aug 31, Sep 16, & Oct 1 2001



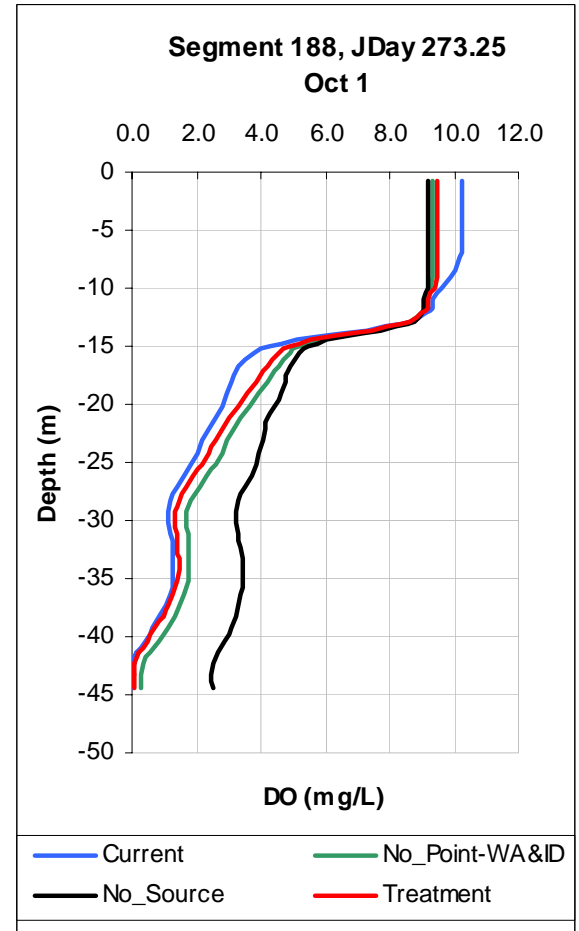
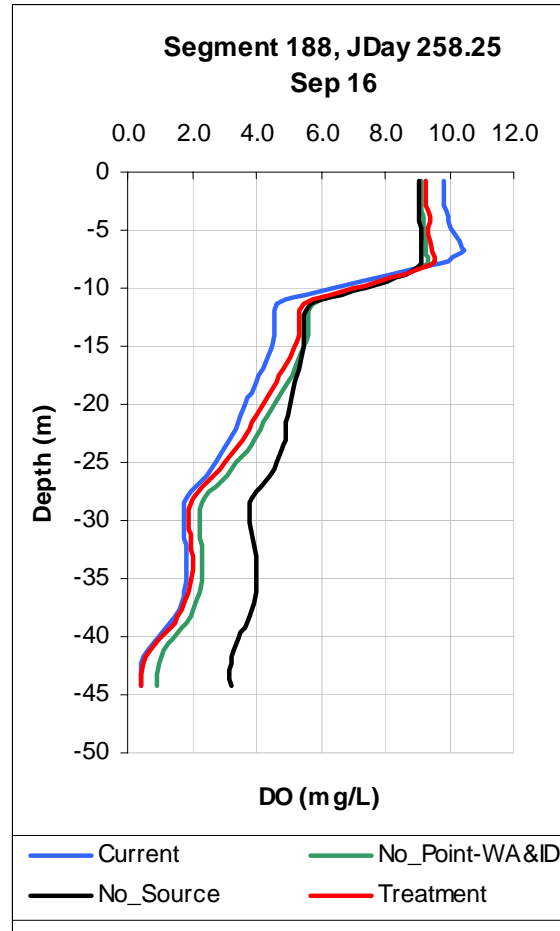
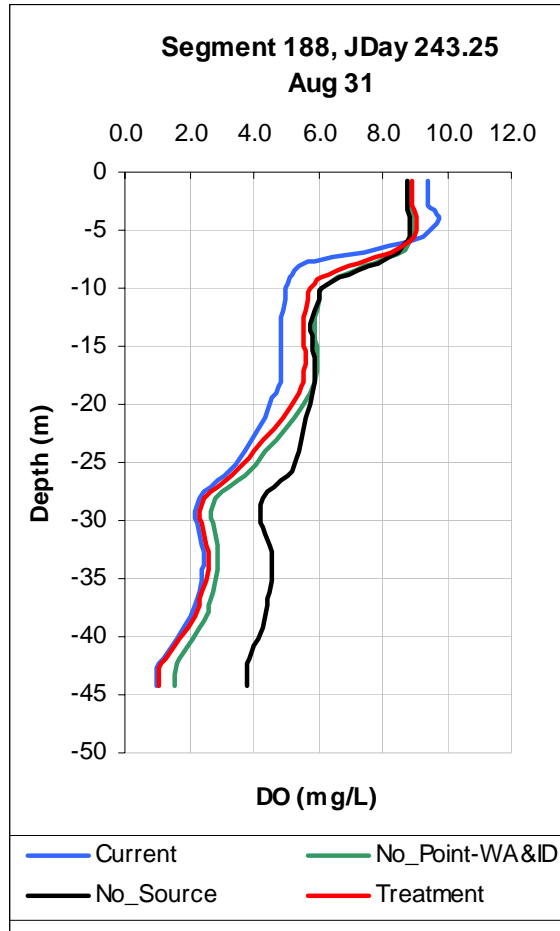
Augmented Flow @ Post Falls gage 745 cfs



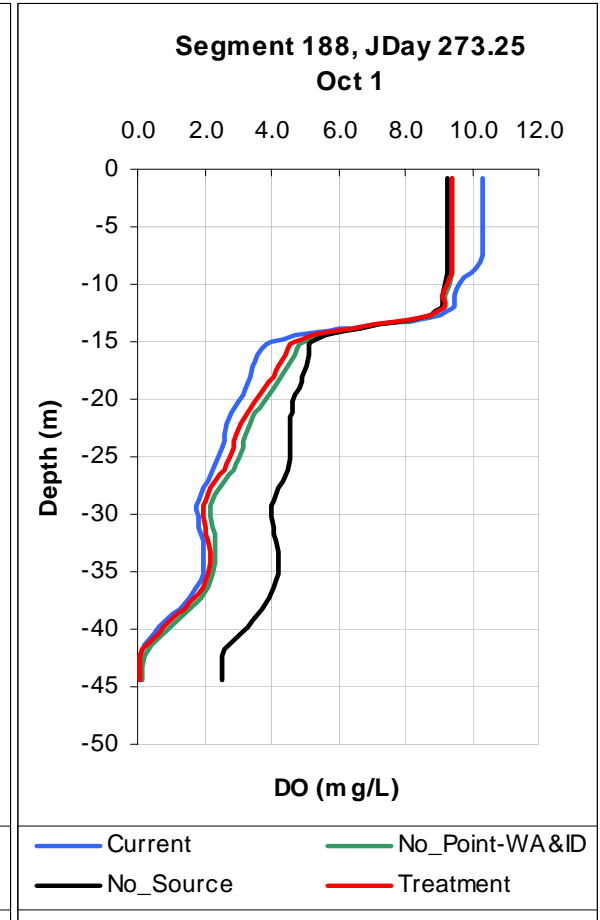
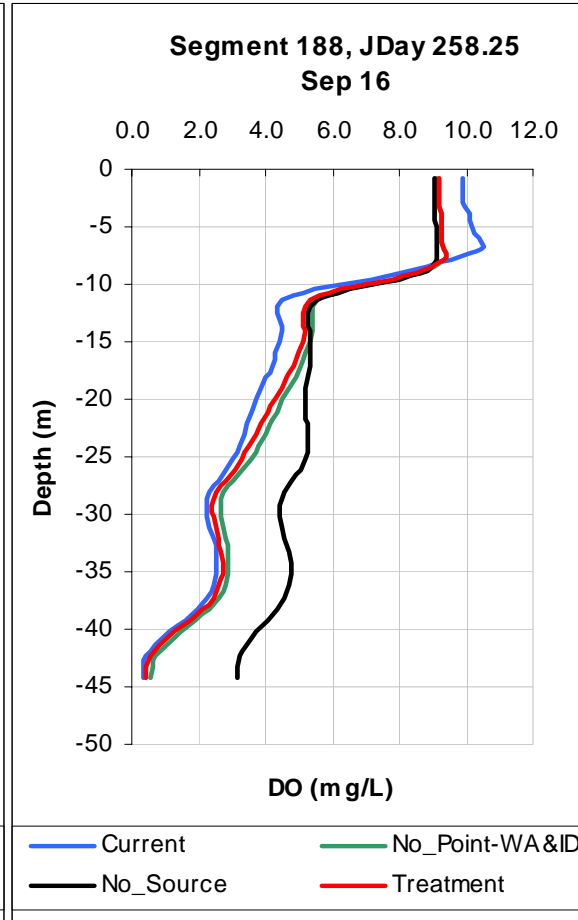
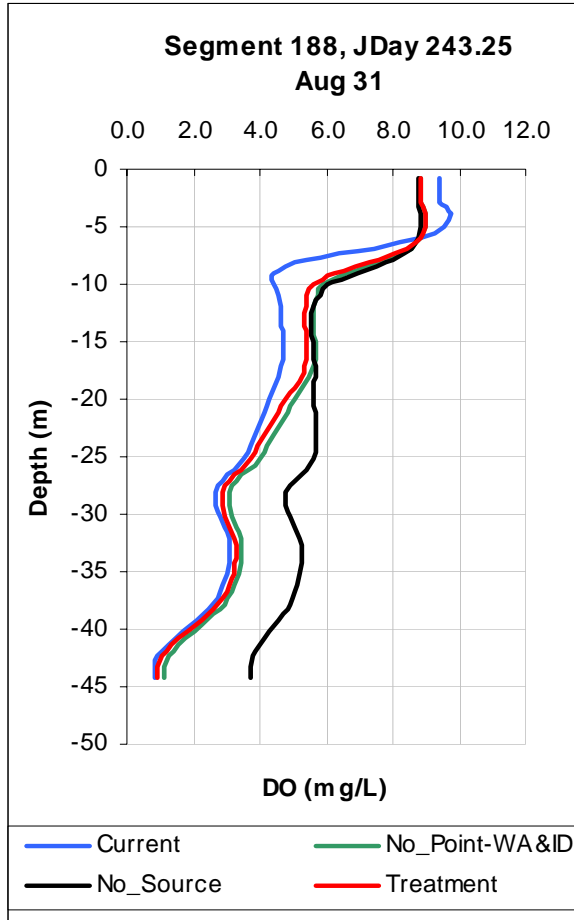
Augmented Flow @ Post Falls 745 cfs



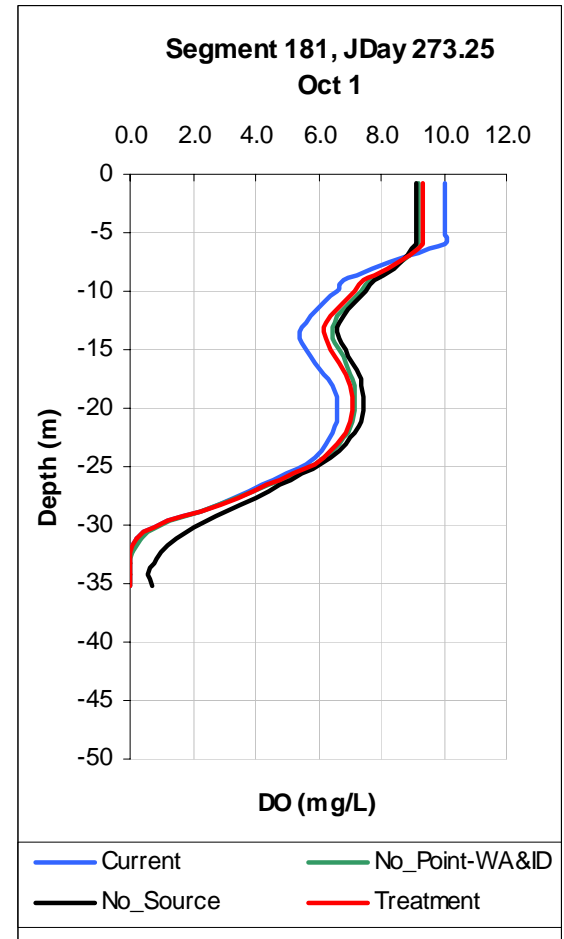
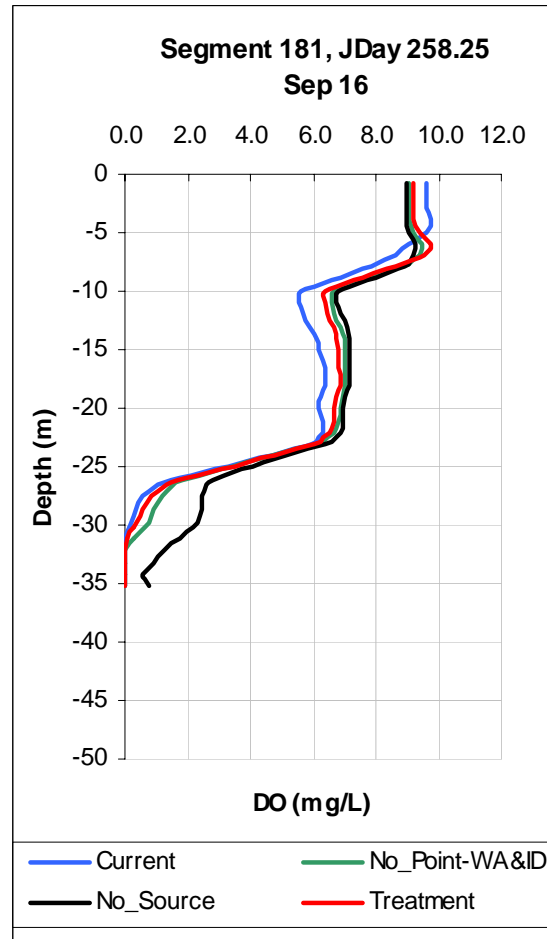
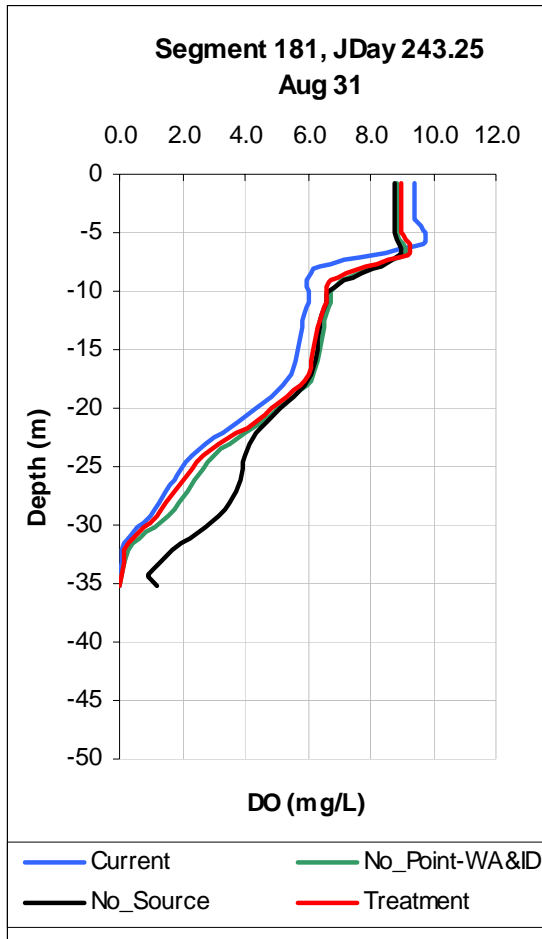
Augmented Flow @ Post Falls gage 745 cfs



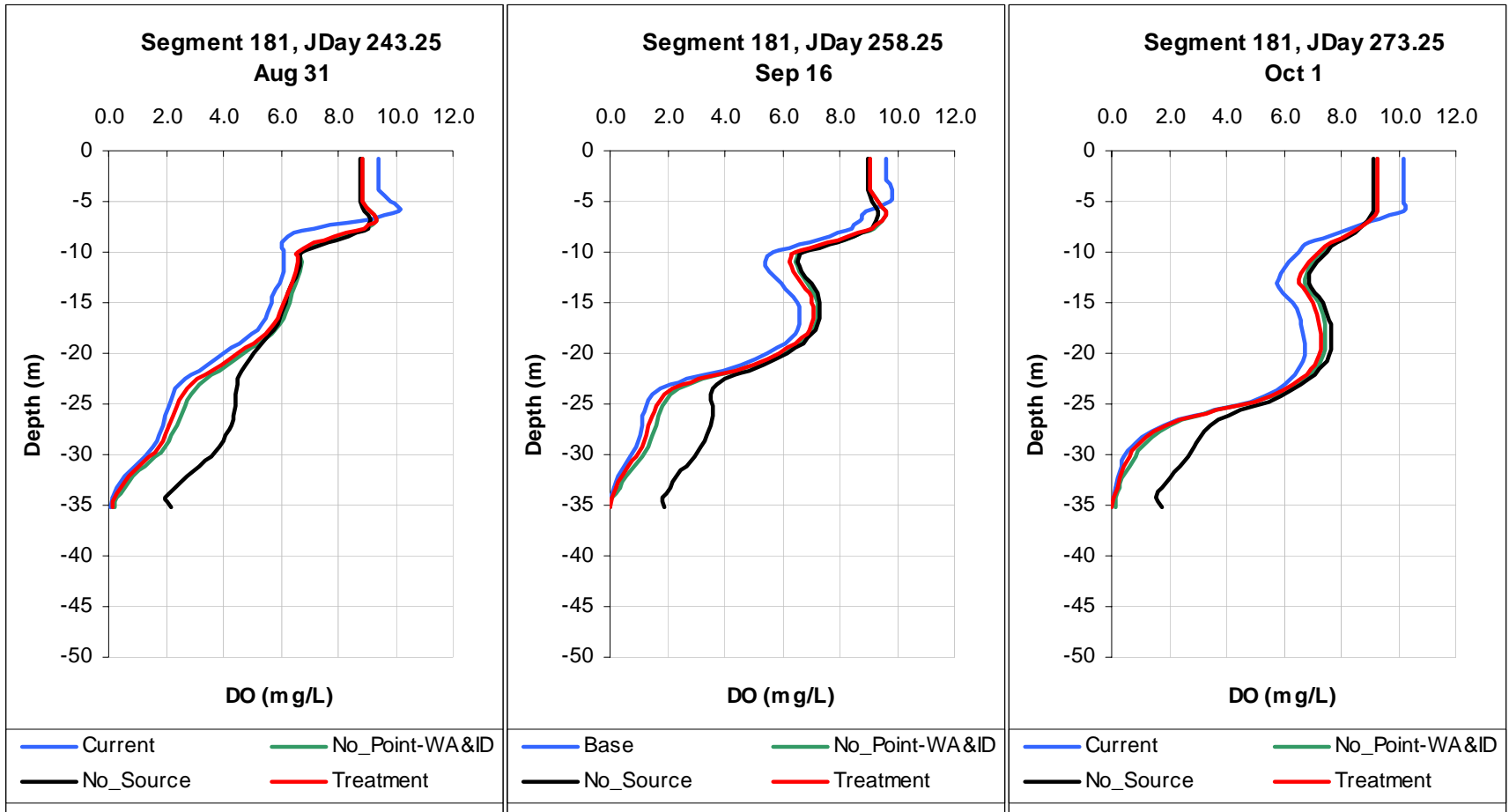
2001 Design Conditions



Augmented Flow @ Post Falls gage 745 cfs



2001 Design Conditions



Augmented Flow @ Post Falls

2001 Condition with minimum flow held at 745 cfs @ Post Falls gage through end of Sept

- Chlorophyll concentration is reduced by 50% in upper reservoir compared to 2001 conditions
- DO profiles in lower reservoir are not changed significantly (*some potential impact from longer residence time in hypolimnion*)
- Does not account for possible changes in SOD from reduce algal productivity

Spokane Co. Scenario Request

Scenario #1

- Assume 65 MGD @ 60 ug TP/L Spokane City/Co
- Kaiser 20 mgd @ 60 ug TP/L
- Inland Empire Paper @ 200 ug TP/L (4.1 mgd?)
- Liberty Lk?

Scenario #2

- Assume that if alternatives to seasonal river discharge were required, point source phosphorus loads would be eliminated, but river flow was effluent volume disappears from the basin (~100-150 CFS?)

Draft Timeline - Submittal to EPA December 31, 2004

July/August-04 Refine TMDL proposal

August-04 Draft TMDL and SIS

Sept 04 Internal Review (2-3 weeks)

Oct-04 Public Workshop and 30 day comment period

Nov-04 Respond to Comments and revise TMDL

December-05 Submit to EPA

Attachment 2 – Sierra Club proposed Summary Implementation Strategy

SPOKANE RIVER DISSOLVED OXYGEN TMDL

SUMMARY IMPLEMENTATION STRATEGY

DRAFT JULY 27, 2004

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Appendix A: Potential Funding Sources for Water Quality Projects

**Spokane River Dissolved Oxygen TMDL
Summary Implementation Strategy
Draft July 27, 2004**

Introduction

In 1997, Ecology entered into a Memorandum of Agreement (MOA) with the U.S. Environmental Protection Agency regarding the development of TMDLs in Washington state. The MOA was the result of a lawsuit and consent decree filed in federal court that requires Ecology to complete all TMDLs by 2013. Among other requirements, the consent decree requires Washington TMDLs to include a Summary Implementation Strategy (SIS).

This document is a draft Summary Implementation Strategy or SIS, developed by the Sierra Club and the Center for Justice in Spokane for inclusion in the Spokane River dissolved oxygen TMDL. Its purpose is to outline the strategies and specific measures that point source dischargers will undertake in order to meet the dissolved oxygen water quality standard for the Spokane River. It is intended to serve as the basis for the SIS chapter of the TMDL.

The draft dissolved oxygen TMDL projects that point source dischargers will be required to meet a phosphorous effluent limit of 10 micrograms per liter (ug/l). To meet this standard, dischargers will have to either install new treatment technology or develop new strategies for disposing of treated effluent during the summer months. Because 40-50 million gallons per day of treated effluent is involved, the development and execution of implementation strategies requires forethought and planning.

According to Ecology's TMDL Guidance Document, development of the SIS should have begun when the draft technical report was issued, approximately one year ago. Given that Ecology plans to finalize an adopt the Spokane River DO TMDL by December, 2004, it is urgent that development of the SIS begin immediately.

1. SIS process and requirements.

A Summary Implementation Strategy is a "clear, concise, and sequential presentation of the concept or vision of how to attain the pollution allocations stated in the TMDL technical report and upon implementation will result in meeting water quality standards." Guidance Document for Developing Total Maximum Daily Loads (TMDL) – Water Cleanup Plans, Dep't of Ecology Publ. No. 99-23-WQ at 20. (hereafter TMDL Guidance Document or GD). The SIS "should be a foundation for the detailed implementation plan" or DIP, which will be developed after EPA approves the TMDL. GD at 21.

In developing the SIS, the TMDL advisory group must develop and evaluate preferred cleanup strategies that identify commitments needed to achieve water quality goals for the project. GD at 22. The SIS is the foundation for the Detailed Implementation Plan,

which is promulgated after the TMDL is submitted to EPA, and which must indicate what parties will undertake what actions, and by when. GD at 22.

Development of the SIS involves consultation with tribes, the technical advisory committee, and the community. The draft SIS must be circulated for public comment prior to submittal to EPA.

2. Schedule

The schedule for implementation will be driven by the schedule for compliance as shown in June 22, 2004 draft TMDL or developed in subsequent drafts of the TMDL. Requirements for establishing implementation milestones, monitoring and evaluation implementation, and amending the TMDL if necessary, are discussed in Parts 5 and 6 below.

3. Strategies & Approaches to Achieve TMDL Allocations

Each of the NPDES permit holders on the Spokane River will adopt the following strategies, as appropriate, to reduce phosphorous loading to the Spokane River and achieve waste load allocations (WLAs) as set forth in the TMDL.

A. INFLUENT CONTROL & REDUCTION

Background:

Reduction of the volume and pollution content of influent into treatment plants can reduce the volume of effluent and thus the capacity requirements for treatment plants. Influent reduction strategies include I/I (influent & infiltration) control and water conservation. Pollutant reduction strategies vary. Because phosphorous is a pollutant of concern in the Spokane River DO TMDL, control of phosphate content in household and commercial products can reduce phosphorous treatment requirements. Advances in wastewater treatment technologies have eliminated concerns that increase in pollutant concentrations caused by water use reductions will increase pollutant discharges.

Strategies:

1. Municipal NPDES permit holders will adopt measures to investigate and control I/I losses in municipal sewer systems.
2. Municipal NPDES permit holders will conduct water audits and adopt water conservation measures to reduce household and commercial water use by their customers.
3. Industrial NPDES permit holders will conduct internal water audits to reduce internal water use and industrial effluent.

4. Spokane County will adopt an ordinance to ban the sale and/or use of dishwashing detergent that contains phosphorous.

Specific water conservation measures & examples:

(1) Infiltration & Inflow Control

- Identification and reduction of inflow & infiltration (I/I) into sewer pipes reduces the quantity of influent into wastewater treatment plants, and is an effective tool to reduce the quantity of effluent discharged by treatment plants.

Examples:

- EPA surveyed 212 communities to develop 20 recommendations for I/I control that should be implemented *before* wastewater treatment plants are built or enlarged.
<http://www.epa.gov/ednnrmrl/repository/abstrac1/abstrac6.htm>
- King County, Washington has developed a comprehensive I/I control program designed to reduce the size and capacity of water quality conveyance and treatment systems, and thereby save public funding.
<http://dnr.metrokc.gov/wtd/i-i/whatis.htm>
- San Antonio, Texas employs an aggressive I/I control program. Its original purpose was to protect recharge to the Edwards Aquifer, but has had the added benefit of reducing influent into the municipal wastewater treatment plant. <http://www.saws.org/infrastructure/>

(2) Water Conservation

- Enact ordinances requiring use of low-flow fixtures (toilets, washing machines, dishwashers, showerheads) in all new construction, ordinances requiring phased retrofit for existing residences and buildings (e.g., 10 years or when replacement needed, whichever comes first), and develop and funding rebate programs.

Examples:

- There are untold resources on municipal water conservation. A good place to start is Water Wiser, sponsored by the American Water Works Association (AWWA). <http://www.awwa.org/waterwiser/>
- Seattle Public Utilities has undertaken an aggressive water conservation program. Consumption dropped more than 10 million gallons pre day, even while the city's population grew from 1 to 1.3 million. SPU's program includes use of conservation rate structures, a new plumbing

code, low flow fixture program, and better systems operations.

http://www.seattle.gov/util/About_SPU/Water_System/index.asp

- Tacoma reports 1.1 mgd in water savings from plumbing code changes.
<http://www.ci.tacoma.wa.us/water/WaterConservation/conservacc.htm>
- Denver's low flow fixture rebate program:
http://www.water.denver.co.gov/popmain.html?drought/rebate_program.html&2

- Water pricing is one of the most effective incentives to reduce consumer use of water. Purveyors must evaluate and adopt water conservation rate structures.

Examples:

- The Washington Dep't of Health has a series of publications on water pricing. <http://www.mrsc.org/Subjects/Environment/water/wc-measures.aspx#Conspricing>
 - The Municipal Research & Service Center (MSRC) provides links for seven Washington municipal ordinances adopting water conservation rates. <http://www.mrsc.org/Subjects/Environment/water/wc-rates.aspx>
 - Whitworth Water District has adopted conservation-oriented water rates to control excessive consumer usage.
- Require water purveyors to audit water leakage and evaluate internal water use (municipal buildings, etc.), install low-water fixtures, operational controls, etc.

Examples:

- The City of Tacoma has saved 5.8 mgd with leakage control and better management of reservoirs, transmission lines and meters.
<http://www.ci.tacoma.wa.us/water/WaterConservation/conservacc.htm>
- Establish a program to conduct commercial water audits. Dischargers and municipalities will establish standards for categories of water use (i.e., restaurants, car washes, etc.), adopt ordinances to require appropriate water usage and use of low-water fixtures, develop commercial water audit program and schedules, develop and fund rebate programs to replace commercial water use fixtures.

Examples:

- Albuquerque, N.M. offers free water audits to commercial and residential customers, and reports post-audit savings of between 8 and 30%.
<http://www.cabq.gov/waterconservation/auditformici.html>
- San Jose, California was ordered to reduce flows from its municipal wastewater treatment plant to protect salt marsh habitat for endangered

species. As part of the program, the City conducted a Flow Audit Study to assess methods to reduce commercial and industrial discharges into the wastewater system. <http://www.ci.san-jose.ca.us/esd/fas.htm>

- Industrial water audits. Industrial dischargers shall audit internal water use and adopt recycling technologies as alternative to discharge. Phased reduction of permitted effluent discharge as contemplated under CWA NPDES program.

Examples:

- The Simpson Tacoma Kraft mill in Tacoma, Washington reduced water consumption by 10 million gallons per day by installing equipment to treat and recycle water within the plant.
<http://www.simpson.com/environment.cfm>
- Crown Cork & Seal in Portland, Oregon saved 8.5 million gallons of water and \$46,000 per year by changing operation of flow-control valves and switching from water to air-cooled equipment.
http://www.sustainableportland.org/energy_Crown_Cork.pdf

(3) Consumer Phosphorous Use Reduction

- RCW Chapter 70.95L bans the use of laundry detergents with greater than 0.5% phosphorous content and dishwashing detergents with greater than 8.7% phosphorous. Spokane County should enact an ordinance banning the local sale of all dishwashing detergent with phosphorous content.

Examples:

- Phosphate-free dishwashing detergent is now available at competitive prices (e.g., Seventh Generation dishwashing detergent has zero phosphate content).
- Phosphorous reduction has been a critical issue in restoration of Chesapeake Bay. Reduction in consumer use is key.
http://www.chesapeakebay.net/status/status_dev.cfm?SID=128&SUBJECTAREA=INDICATORS

B. ALTERNATIVE TREATMENT TECHNOLOGY

Background

The Department of Ecology proposes a reduction in phosphorus point source loading to 50 ug/L by 2008 with a total reduction to 10 ug/L by 2015. These reductions are necessary in order to limit problematic algae blooms and restore the river to the dissolved

oxygen levels required by the State under the Clean Water Act. Several technologies exist which appear to be capable of achieving stringent reductions of phosphorus.

Strategies:

NPDES permit dischargers shall evaluate new technologies to determine suitability and cost effectiveness.

Examples & Contact Information:

- Micromedia Technologies: 8544 Hamilton Avenue, Huntington Beach, CA 92646; Phone: (949) 683-8111, Fax: (949) 589-2555 E-Mail: slux@micromediafiltration.com
 - MicroMedia Filtration Inc., is a two-stage self-cleaning filter that treats primary effluent, which can be used for processing both surface water and wastewater treatment. MicroMedia has received EPA certification of its CleanStream system.
 - Plants in Stemford and Walton New York have achieved phosphorus removal averages at 0.007 mg/l and .0097 mg/l respectfully using MircoMedia's dual sand filtration process as a tertiary filter.
- Blue Water Technologies Inc.: 206 Indiana Ave., Ste. 204; Coeur d'Alene, Idaho 83814; (208) 664-5734, Fax: (208) 667-6317; www.blueh2o.net.
 - BlueWater Technologies Vandal Ion filter is a tertiary, end of pipe, filtration system which can be added to any existing treatment system.
 - Blue Water claims to have the most advanced system to remove phosphorus in the industry. Removes phosphorus to NPDES discharge limits including non-detect (< 10ppb) limits.

C. RECLAMATION & REUSE

Background:

RCW 90.46.005 states: "[T]he people of the state of Washington have a primary interest in the development of facilities to provide reclaimed water To the extent reclaimed water is appropriate for beneficial uses, it should be so used" In the case of the Spokane River, this mandate is also an opportunity.

Reclaimed (or recycled) water is already used extensively at locations across the country, and would provide at least two significant benefits: First, water which is reclaimed for other purposes need not be discharged into the river, reducing the stress on the system.

Second, reclaimed water used locally substitutes for water which would otherwise be

drawn from natural sources. Eliminating the need for such withdrawals enhances natural flows, including avoiding negative effects occurring upstream of the current discharge points. As municipalities and holders of state waste discharge permits are among those eligible to obtain water reclamation permits (see, e.g., RCW 90.46.030(4)), this option is available to all point source dischargers on the Spokane River.

Pursuant to RCW 90.46, the Washington State Departments of Health and Ecology issued the *Water Reclamation and Reuse Standards* (publication #97-23, hereafter Standards) in September 1997. These standards identify various uses appropriate for reclaimed water and set the criteria to be met by water used for each such purpose. One significant use is for irrigation, where some of the same substances considered contaminants when dumped in a river serve a beneficial purpose instead.

Strategies:

- (1) Municipal sewage treatment plants shall implement programs to provide reclaimed water of suitable quality for appropriate and available local uses.
- (2) Municipalities shall implement programs to use reclaimed water for all appropriate beneficial uses.
- (3) Land use planning shall require all major residential, commercial, industrial, and municipal development projects to include accommodation for appropriate reclaimed water uses.
- (4) Industrial dischargers shall develop their own reclamation facilities, contract to redirect their discharges into municipal reclamation facilities, or contract to substitute municipal reclaimed wastewater for industrial purposes.

Specific reclamation and reuse measures:

- Each municipality shall develop and implement a phased plan for converting municipal landscape irrigation to use reclaimed water, including roadways, golf courses, athletic fields, parks, and school grounds. The Level 1 Assessment for the Middle Spokane Watershed suggests that local non-agricultural irrigation demand is roughly equal to total municipal wastewater discharges, indicating a significant potential use for reclaimed water.
- Each municipality shall provide the opportunity for major private landscape irrigators to convert to reclaimed water. Municipalities shall provide reasonable incentives for such conversion.
- Each municipality shall facilitate delivery of reclaimed water to major development projects, both for construction use and later maintenance use. Such development projects shall be required to be constructed with the ability to use reclaimed water use for all appropriate purposes even if such use is not anticipated for the foreseeable future.
- Each municipality shall develop and implement a phased plan for converting significant uses identified in Article 4 of Section 1 in the Standards to reclaimed

water.

- Each municipality shall develop and implement a plan for identifying suitable sites and creating or enhancing wetlands using reclaimed water. Such wetlands may be for wildlife, recreation, or education purposes, or any combination. The Standards limit reclaimed water discharged into wetlands to 1 mg/l of phosphorus, a standard that most Spokane River dischargers are meeting or exceeding.
- Any municipality with established uses which consume its entire reclaimed water supply need not implement further uses.
- Industrial dischargers that choose to develop independent reclamation facilities, the water reclaimed shall be used internally to the extent possible, with only the excess delivered off-site.

Examples & Contact Information:

- Tucson has provided reclaimed water for irrigation purposes for 19 years, supplying an average of over 9 MGD to users including 14 golf courses, 32 parks, 40 schools and over 300 individual homes.
http://www.ci.tucson.az.us/water/water_resources/reclaimed_water/reclaimed_water.htm
- San Diego has used reclaimed water for over 50 years, presently having two major water reclamation facilities processing a total of some 45 MGD of reclaimed water. The principal use is for landscape irrigation, with users including schools, industry, recreational facilities, the state highway department, etc. <http://www.sannet.gov/water/recycled/index.shtml>
- The Santee Lakes reclamation facility in San Diego County has offered recreational boating and fishing since the 1960s. While the same sort of facility is not as feasible for the Spokane area (the standards suggest reducing phosphorus levels for any such use), they should be a useful source regarding the marketing of reclaimed water recreation. <http://www.santeelakes.com/>
- The South Florida Water Management District uses the majority of some 575 MGD of reclaimed water processed in the state of Florida. Uses include landscape irrigation at golf courses, parks, schools and individual residences, wetlands enhancement, groundwater recharge, and cooling at a solid waste energy generation plant.
<http://www.sfwmd.gov/org/wsd/wsconservation/pdfs/reuse/blwsurfreuse.pdf>
- Earlier this year, Denver opened the first phase of a water reclamation facility designed to process 30 MGD (at a cost of \$164 million) and capable of expansion to 45 MGD. The first major customer is using reclaimed water for cooling in an energy plant; other anticipated uses include irrigation and supplying lakes for recreation and wildlife. <http://www.denverwater.org/recycle/recycleframe.html>
- Salem, Oregon is presently testing a facility using constructed wetlands to treat reclaimed water. <http://www.salemnatural.net/index.htm>
- San Antonio, Texas has operated water reclamation facilities since the 1930s.

Current facilities include major sites processing some 120 MGD and small operations serving individual schools or communities.

http://www.saws.org/our_water/recycling/centers/index.shtml

- One of the demonstration projects authorized by RCW 90.46.110 is in Yelm, where an artificial wetland used for treatment and groundwater recharge also functions as a public park. <http://www.ci.yelm.wa.us/publicworks/cochrane.htm>
- Eastern Municipal Water District (PO Box 8300 2270 Trumble Road, Perris, CA 92572; (909) 928-3777 ext. 4226) treats wastewater to tertiary levels through the use of gravity sand and gravel filters and then discharges it to a wetland which provides habitat for migratory birds, fish, and functions as a research and education center for alternative water treatment.

D. Land Application

Background:

One alternative to discharging treated waste water into the Spokane River is to land apply treated effluent, applying it at agronomic rates to support crops.

Strategies:

- (1) NPDES dischargers shall investigate land application potential and develop a land application program after influent reduction strategies have been employed, for that quantity of treated effluent that cannot be utilized re-use in the community.

Examples & Contact Information:

- Direct Application: Hayden Area Regional Sewer Board (Jim Taccogna) 10789 N Atlas Rd Rathdrum, ID 83835 – 7689 (208) 772-0672; haydenwwtf@aol.com.
 - Since 1995, Hayden has land applied treated effluent from mid-June to mid-September to approximately 450 acres, to irrigate 35 acres of hybrid poplar trees, and the rest to blue grass and alfalfa.
 - Discharge 1 mgd to the storage pond then apply it to land; monitor daily and only apply as much as is used by vegetation.
 - 95% removal of BOD and suspended solids
 - Research project with BlueWater Technologies now underway
- Biocycle Farm: Eugene, OR <http://www.ci.eugene.or.us/pw/www/pww.asp>
 - Eugene, Oregon discharges its treated effluent onto poplar trees plantation. Trees are then sold for various commercial products.
- Chehalis, Washington is now implementing a dissolved oxygen TMDL imposing zero discharge limits for certain pollutants during low flow conditions at their

outfall to the Chehalis River. One measure they are taking to achieve this requirement is water reclamation and use for irrigating a grove of poplars.

4. Implementation Responsibilities of the Department of Ecology

Both the TMDL Guidance Document and the Ecology-EPA MOA detail Ecology's responsibilities in developing implementation strategies. These include:

- ensuring meaningful public participation;
- providing technical assistance, including information concerning funding sources, to affected persons and agencies;
- issuing NPDES permits in conformity with the plan;
- monitoring the success of the plan and the compliance of the participants, and
- providing incentives for compliance and enforcement proceedings as necessary.

The following sections outline each of these responsibilities and set forth specific responsibilities concerning the Spokane River Dissolved Oxygen TMDL:

A. Public/Community Participation

The SIS should be jointly developed with the assistance of governmental agencies, conservation districts, citizen groups, tribes and other affected persons. Ecology should lead this coordinated effort through consultation and public oversight.

Pursuant to the MOA, Ecology must implement a public participation process during the development of the TMDL which at a minimum meets federal requirements for public involvement. *See* 40 CFR § 25.4. These include:

- Making all information used in the TMDL process available to the public.
- Notifying all interested and affected persons at least 30 days prior to major actions such as submittal of a draft report to EPA or adoption of a TMDL.
- Consulting with the public prior to making final decisions through public hearings, public meetings, advisory groups, ad hoc committees, task forces, or workshops.
- Allowing for open public comment periods
- Responding to public comments and preparing a responsiveness summary as described in 40 CFR Part 25.8.
- Providing information concerning legal proceedings.

Because community participation is integral to a successful SIS, the TMDL Guidance Document recommends early identification and contact with those persons and entities most affected. At a minimum, the following should be contacted: Tribes, county commissioners, city and county officials, planners, public works departments; irrigation districts; affected businesses (wheat farmers, cattle ranchers, dairies, developers, etc.);

2514 groups; watershed groups; environmental groups; local health departments; point source dischargers; legislators; other state and federal agencies (DOT, NMFS, USF&W, WDNR, WDFW, NRCS); local land owners. *GD at 15. See also Ecology's publication, "Environmental Justice Public Participation Checklist" for further public outreach resources.*

Development of the SIS should begin as soon as the draft technical report is received. The draft SIS must be put out for public comment prior to submittal to EPA. The SIS Public Comment Process should consist of the following items:

- Focus sheet sent to project mailing lists
- Newspaper ads (public comment period)
- News release (at recommendation of Public Information Officer)
- Public involvement calendar
- Public meetings
- 30-day comment period
- Response to comments
- Mail response to all commenters.
- Prepare responsiveness summary to public comments to include in Submittal Report

Guidance Document at 23.

B. Implementation Strategies for Point Sources/NPDES Permits

Ecology will implement the Spokane River DO TMDL by incorporating appropriate conditions in discharger NPDES permits. Effluent limits in the Spokane River NPDES permits must conform to the TMDL. 40 CFR §§ 122.4, 122.44. For existing dischargers, the TMDL will include a compliance schedule setting forth interim targets and monitoring schedules as necessary to assess the efficacy of implemented controls. All permits must require effluent and ambient monitoring necessary to show that the effluent limits are being met and re-opener clauses allowing Ecology to modify or revoke the permit if the permit limits or the permittee fail to attain specified targets. 40 CFR § 122.44. *See also WAC §§ 173-220-180, -190.* All permits may be modified as necessary to achieve the interim targets set forth in the TMDL. 40 CFR §§ 122.44, 124.5.

No permits will be issued for new or expanded loads unless there is a TMDL in place and the applicant can show that its discharge will not degrade the waters, there are waste load allocations available, and the existing dischargers are on a compliance schedule. 40 CFR § 122.4. New sources/new dischargers must be in compliance with the required effluent limits set forth in the TMDL upon commencement and may not obtain a compliance schedule. WAC § 173-201A-510(4).

C. Technical Assistance & Funding

As outlined above, community members, affected persons, tribes, and regional agencies participate in developing the cleanup plan, but only Ecology can submit a TMDL to EPA. Hence, Ecology should provide technical assistance to all participants as necessary to insure that the final plan will not only gain EPA approval, but succeed. Ecology provides various resources to support voluntary compliance with environmental rules and regulations, many of which are listed at Ecology's website www.ecy.wa.gov/ta.html.

Multiple sources of financial assistance for water cleanup activities are available through Ecology and EPA grant and loan programs, local conservation districts, and other sources. Funding is available for such activities as:

- planning, design, and construction of wastewater and storm water treatment facilities;
- watershed planning, water quality monitoring, and wellhead protection;
- agricultural best management practices projects;
- local loan funds for water quality projects,;
- water reuse planning and facilities;
- lake restoration;
- acquiring wetland habitat for preservation,
- public information and education.

See Appendix A, Potential Funding Sources for Water Quality Projects

5. Monitoring

Under WAC § 173-220-210, any discharge authorized by a permit is subject to monitoring requirements as may be reasonably required by Ecology. The MOA, EPA Guidelines, and TMDL Guidance Document require detailed monitoring plans where implementation will be phased in over time. All permits must require effluent and ambient monitoring necessary to show that the effluent limits are being met and re-opener clauses allowing Ecology to modify or revoke the permit if the permit limits or the permittee fail to attain specified targets. 40 CFR § 122.44. See also WAC §§ 173-220-180, -190.

Monitoring for the Spokane River dissolved oxygen TMDL shall include the following:

- (1) Ambient monitoring of the Spokane River. An ambient water monitoring program must include collection and analysis of physical, chemical and biological data assurance and control programs to assure scientifically valid data. 40 CFR § 130.4. The data will be used to assess compliance

- with NPDES permits and the efficacy of nonpoint source cleanup strategies. Reports will be made public through section 305(b) reports.
- (2) Discharge monitoring reports prepared by NPDES permit holders. In addition to standard DMRs, for existing dischargers, the TMDL will include a compliance schedule setting forth interim targets and monitoring schedules as necessary to assess the efficacy of implemented controls.
 - (3) SIS/DIP progress monitoring. The TMDL Detailed Implementation Plan will establish a series of milestones for the implementation of the strategies identified in Part 3 above. Ecology will develop and circulate a quarterly report that indicates levels of progress for each party that is charged with responsibilities for implementation.

Pursuant to the Ecology-EPA MOA, the monitoring program must include interim and final targets to determine if the plan is working. The final targets must meet water quality standards at the end of the planned period. For point sources, a schedule of compliance shall be specified in the permit which will set forth interim requirements, the dates for their achievement, and reporting requirements. WAC § 173-220-140. Reports must be made available to the public for inspection.

For nonpoint sources, the TMDL must specify outcome-based, measurable targets and the agencies responsible for regular monitoring. Normally, Ecology must specify in the implementation plan other more restrictive measures which will be applied should initial measures not be implemented or successful. Because TMDL water quality planning is newly underway in Latah Creek and the Little Spokane River, the two major tributaries to the Spokane River that contribute nonpoint pollution, development and implementation of those plans must be coordinated with the Spokane River DO TMDL.

6. Evaluation & TMDL Amendment

The monitoring and progress reports described in Part 5 shall be used as a basis for assessing the need for amendments to the TMDL. The TMDL and Detailed Implementation Plan shall be amended if (1) progress in implementation is not accomplished according to established milestones, (2) interim effluent targets are not met, or (3) ambient water quality monitoring indicates that dissolved oxygen in the Spokane River is worsening.

Spokane River Dissolved Oxygen TMDL
Summary Implementation Strategy

APPENDIX A
POTENTIAL FUNDING SOURCES
FOR WATER QUALITY PROJECTS

The following is a short list of the numerous websites offering information and links to financial and incentive programs for water quality enhancement.

1. The Department of Ecology's Water Quality Program administers three major funding programs that provide low-interest loans and grants for projects that protect and improve water quality in Washington State. Funding is available to local governments, recognized Indian tribes, special purpose districts such as sewer, health, and conservation districts, and not-for-profit groups.

The three programs sharing guidelines, application, and funding cycle are:

- The Centennial Clean Water Fund (Centennial), which provides low-interest loans and grants for wastewater treatment facilities and fund-related activities to reduce nonpoint sources of water pollution.
- The State Revolving Loan Fund (SRF), which provides low-interest loans for wastewater treatment facilities and related activities, or to reduce nonpoint sources of water pollution.
- The Section 319 Nonpoint Source Grants Program (Section 319), which provides grants to reduce nonpoint sources of water pollution.

See "Ecology's Grants and Loans Programs" at
<http://www.ecy.wa.gov/programs/wq/links/funding.html>.

2. The EPA's website "Funding Opportunities" provides other links to potential funding sources and resources such as the following:
 - Watershed Funding Information
 - Process for Applying for 319(h) Funds
 - Funding Documents
A list of funding documents that the "Nonpoint Source Control Branch" at EPA headquarters recommends.
 - Applying for and Administering CWA Section 319 Grants: A Guide for State Nonpoint Source Agencies
This manual provides an overview of federal grant requirements to guide state and territory nonpoint source agency staff when applying for and administering grants awarded under the Clean Water Act Section 319.

- Nonpoint Source Minigrants (PDF, 100KB, 38 pages)
This report describes mini-grants programs used by various States, local agencies, and non-profit organizations to implement efforts to address nonpoint source pollution and to protect or restore watersheds. Many of these are implemented as sub-awards, through State grant or contract mechanisms, of funds received by the State as part of an EPA grant under Section 319 of the Clean Water Act. Others are purely State-funded.
- A State and Local Government Guide to Environmental Program Funding Alternatives
This document provides an overview of traditional (nongovernmental) funding mechanisms and innovative approaches for funding environmental programs.
- Office of Wastewater Management Financial Assistance page
- Environmental Finance Program - A Guidebook of Financial Tools
This Guidebook is intended to be a working tool to enable practitioners in the public and private sector to find the appropriate methods to pay for environmental protection efforts. The Guidebook does not explain how or where to apply for nonpoint source related grants.
- The Clean Water State Revolving Fund - How to Fund Nonpoint Source & Estuary Enhancement Projects (PDF, 1.1MB, 19 pages)
- Cleaning Up Polluted Runoff with the Clean Water State Revolving Fund (PDF, 44KB, 2 pages)
- Capacity Building Resources
This website, put together by the Nonpoint Source Capacity Building and Funding Work Group, provides watershed groups and local governments links to technical tools for scientific support, engineering support, information technology, assistance with legal issues, project management, outreach, and planning support. It also provides links to legal resources for activities such as permitting, enforcement, contracting, fund raising, and resource management.

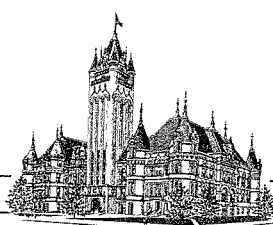
See <http://www.epa.gov/owow/nps/funding.html>.

3. The United States Department of Agriculture Natural Resources Conservation Service (NRCS) webpage "Conservation Programs" offers links to numerous water quality related financial assistance programs, including those offered in Washington State. See <http://www.nrcs.usda.gov/programs/>.
4. The United States Department of Agriculture's website "Funding for Water Quality" provides links to numerous federal programs that offer technical and financial assistance and incentives to public and private organizations and persons. See www.nal.usda.gov/wqic/funding.html.
5. Other resources may be found through the "Catalog of Federal Funding Sources for Watershed Protection" website which offers a searchable database of financial assistance sources to fund a variety of watershed protection projects. See <http://cfpub.epa.gov/fedfund/>.

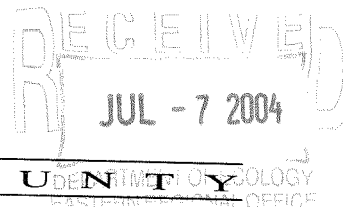
6. Conservation Reserve Enhancement Program (CREP) - The Conservation Reserve Enhancement Program (CREP) is a joint partnership between the State of Washington and USDA, and is administered by the Washington State Conservation Commission and the Farm Services Agency (FSA). The agreement was signed in 1998 and provides incentives to restore and improve salmon and steelhead habitat on private land. The program is voluntary for landowners and the land enrolled in CREP is removed from production and grazing under 10 or 15 year contracts. In return, landowners plant trees and shrubs to stabilize the stream bank and to provide a number of additional ecological functions. Landowners receive annual rent, incentive and maintenance payments and cost share for practice installations. These payments made by FSA and the Conservation Commission, can result in no cost to the landowner for participation. *See* <http://crep.scc.wa.gov/>.
7. Environmental Quality Incentives Program (EQIP) - EQIP is the combination of several conservation programs that address soil, water, and related natural resource concerns. It encourages environmental and conservation farm improvements in a beneficial and cost-effective manner through technical assistance, cost-sharing, and incentive payments. *See* <http://www.nrcs.usda.gov/programs/eqip/>
8. Wetland Reserve Program - Wetland enhancement in exchange for retiring marginal agricultural land administered by NRCS. Provides technical and financial assistance. Contact : Wetland Reserve Program Coordinator for Washington State, USDA Natural Resources Conservation Service, West 316 Boone Ave., Suite 450, Spokane, WA 99201-2348, (509) 353-2337.

Attachment 3 – Spokane County letter of proposed model scenarios

S P O K A N E



C O U N T Y



UTILITIES DIVISION

N. Bruce Rawls, P.E., Utilities Director

A DIVISION OF THE PUBLIC WORKS DEPARTMENT

July 6, 2004

Ken Merrill
Washington State Department of Ecology
4601 North Monroe Street
Spokane, WA 99205-1295

Dear Mr. Merrill:

SUBJECT: DO TMDL DEVELOPMENT

By the County's letter dated June 30, 2004 to Jim Bellatty, we have expressed our present concerns with your decision to expedite development of the Dissolved Oxygen Total Maximum Daily Load (DO TMDL). Without waiving those concerns, this letter is to request that Ecology evaluate two considerations as part of the development of the DO TMDL.

First, we request that Ecology run the DO TMDL computer model for the Spokane River for the point source discharge scenario that has been analyzed by Limno-Tech Inc as part of the Use Attainability Analysis (UAA). The scenario run by Limno-Tech represents what the dischargers and their consulting engineers consider to be state of the art treatment technology. It assumes that the effluent phosphorus loading would achieve a median concentration value of 0.06 mg/L during the low river flow periods, and that reasonable growth in wastewater volumes would occur coincidentally with the substantial reduction in phosphorus concentrations and mass loading. Under this TMDL scenario, the combined flows from the SAWTP and new Spokane County Regional Wastewater Treatment plant are projected to be about 65 million gallons per day (mgd), however the phosphorus loading to the Spokane River would be substantially reduced from present loading. The scenario should also assume a 0.06 mg/L concentration for Kaiser Aluminum at 20 mgd and 0.2 mg/L for Inland Empire Paper Company.

When Limno-Tech ran this scenario compared to current effluent discharge conditions, they concluded that the benefit to the Spokane River was nearly equivalent to eliminating wastewater effluent from the Spokane River during the low river flow periods. The obvious benefits of this scenario are 1) utilization of proven, state of the art technology; 2) substantial reduction of phosphorus loading to the Spokane River; and 3) treated wastewater effluent is retained as a beneficial flow in the Spokane River.

Second, Ecology's Draft Proposal for the DO TMDL suggests phosphorus discharge limits of 10 ug/L for point source dischargers. We request that Ecology survey the existing treatment plants of 15-50 million gallons per day size, in the United States, to determine if

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(509) 477-3604 • FAX: (509) 477-4715 • TDD: (509) 477-7133

July 6, 2004

any plants actually exist with a phosphorus effluent limit of 10 ug/L. We are unaware of any existing plants meeting this effluent limitation. We are also unaware of any proven, available, full-scale technology that assures compliance with such a restrictive discharge limit for phosphorus.

As stated by the discharger group previously, we believe that a proposed phosphorus discharge limit of 10 ug/L can only result in elimination of wastewater effluent discharges into the Spokane River. The detrimental result of this would be substantial reductions in Spokane River flows during what are already critically low river flow periods.

Ecology should not assume, for purposes of the TMDL, that removal of wastewater effluent discharges into the Spokane River will result in beneficial reuse within the basin resulting in an equivalent ground water return flow to the Spokane River. It is much more likely that land disposal of wastewater effluent would occur on lands that presently are not irrigated, and which are far removed from river recharge areas.

As you continue with development of the DO TMDL, we look forward to your written response on the contents of this letter.

Sincerely,

A handwritten signature in black ink that reads "N Bruce Rawls". The signature is fluid and cursive, with the first name "N" being a stylized initial.

N. Bruce Rawls, P.E.

cc: Jim Bellatty, Ecology ERO
Board of County Commissioners of Spokane County